

REMARKS/ARGUMENTS

Claims 1-19 are pending. Claims 1, 4, 5, 7, 8, 10-12, and 15 have been amended. New claims 16-19 have been added. No new matter has been introduced. Applicants believe the claims comply with 35 U.S.C. § 112.

Applicants note with appreciation the indicated allowability of claim 15 if amended to correct minor informalities. Claim 15 as amended is believed to be allowable.

Applicants further note with appreciation the indicated allowability of claims 10 and 11 if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Original claim 10 has been rewritten as new claim 16, and original claim 11 has been rewritten as new claim 18. New claim 17 depends from claim 16, while new claim 19 depends from claim 18. Accordingly, Applicants believe new claims 16-19 are allowable.

Section 102 Rejection of Claims 1-8

Claims 1-8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Armstrong, Jr. et al. (US 6,298,345).

Applicants respectfully submit that independent claim 1 is novel and patentable over Armstrong because, for instance, Armstrong does not teach or suggest that the first storage system records update history of data as a journal in a storage device, and transfers the journal to the second storage system via the communication line in such a way that the second computer is not in a transport path of the journal from the first storage system to the second storage system. As described in the present application at page 2, lines 4-23, "the hosts are used as transport paths of the data" in the prior art since "the data stored in the storage systems are transferred via a communication link between the hosts" and "the CPU loads of the respective hosts, channel loads, and traffics in a line connecting the hosts are increased." The present invention provides "a data processing system capable of recovering data by sampling data update logs, which is able to assure data consistency in a plurality of sites without deteriorating its processing capability by giving no load on hosts and a network." This is accomplished by transferring the journal between the first storage system

and the second storage system without involving the second computer in the transport path of the journal so as to minimize traffics in the general communication line between the first computer and the second computer. See page 50, line 15 to page 51, line 2.

Armstrong does not show a second computer in the drawings. The Examiner states: "Armstrong discloses interfaces may have microprocessors, and that I/O adapters may also be used." As such, the second computer would be in the transport path of the journal between the main memory 120 and the DASD 155. At a minimum, Armstrong does not teach or suggest that the second computer is not in a transport path of the journal from the first storage system to the second storage system.

For at least the foregoing reasons, claim 1 and claims 2-8 depending therefrom are novel and patentable over Armstrong.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Euler et al. (US 6,052,696).

Applicants respectfully submit that independent claim 1 is novel and patentable over Euler because, for instance, Euler does not teach or suggest that the first storage system records update history of data as a journal in a storage device, and transfers the journal to the second storage system via the communication line in such a way that the second computer is not in a transport path of the journal from the first storage system to the second storage system.

As the Examiner pointed out, Euler states at column 5, lines 5-13: "Remote computer system 188 can be implemented utilizing any suitable computer that contains non-volatile storage. But, a preferred embodiment of the present invention can apply to any hardware configuration that allows journaling of records, regardless of whether the computer system is a complicated, multi-user computing apparatus, a single-user workstation, or a network appliance that does not have non-volatile storage of its own." Nothing in Euler teaches or suggests that the second computer is not in a transport path of the journal from the first storage system to the second storage system. As discussed above, the present invention transfers the journal between the first storage system and the second storage system without involving the second computer in the transport path of the journal so as to minimize traffics in the general communication line between the first computer and the second computer.

For at least the foregoing reasons, claim 1 is novel and patentable over Euler.

Section 102 Rejection of Claims 12 and 14

Claims 12 and 14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by de Remer et al. (US 5,412,801).

Applicants respectfully submit that independent claim 12 is novel and patentable over de Remer et al. because, for instance, de Remer does not teach or suggest that the first computer and the second computer are connected to each other via a first communication line, the first storage system and the second storage system are connected to each other via a second communication line, and the first storage system transfers the journal to the second storage system via the second communication line in such a way that the second computer is not in a transport path of the journal from the first storage system to the second storage system.

As the Examiner pointed out, de Remer shows a single communication line connecting the central site main frame 16 with the remote site main frame 24. de Remer does not, however, disclose a first communication line connecting the first computer and the second computer, and a second communication line connecting the first storage system and the second storage system. Moreover, nothing in de Remer teaches or suggests that the first storage system transfers the journal to the second storage system via the second communication line in such a way that the second computer is not in a transport path of the journal from the first storage system to the second storage system.

For at least the foregoing reasons, claim 12 and claim 14 depending therefrom are novel and patentable over de Remer.

Section 103 Rejection of Claim 9

Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Euler et al. in view of Carey et al. (US 5,146,561). The Examiner recognizes that Euler does not disclose that the second storage system acquires information related to a journal recorded in the first storage system, and that the second storage system issues a command requesting the first storage system to send the journal. The Examiner cites Carey for allegedly providing the missing teaching.

While Carey discloses a ready/send system, it does not suggest that the second storage system acquires information related to a journal recorded in the first storage system. Moreover, Carey does not cure the deficiencies of Euler, in that it also fails to teach or suggest that the first storage system records update history of data as a journal in a storage device, and transfers the journal to the second storage system via the communication line in such a way that the second computer is not in a transport path of the journal from the first storage system to the second storage system, as recited in claim 1 from which claim 9 depends.

For at least the foregoing reasons, claim 9 is patentable over Euler and Carey.

Section 103 Rejection of Claim 13

Claim 13 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over de Remer et al. in view of Carey et al. The Examiner recognizes that de Remer does not disclose that the second storage system issues a command requesting the first storage system to send the journal, but cites Carey for allegedly providing the missing teaching.

While Carey discloses a ready/send system, it does not suggest that the second storage system in de Remer issues a command requesting the first storage system to send the journal. Furthermore, Carey does not cure the deficiencies of de Remer, in that it also fails to teach or suggest that the first computer and the second computer are connected to each other via a first communication line, the first storage system and the second storage system are connected to each other via a second communication line, and the first storage system transfers the journal to the second storage system via the second communication line in such a way that the second computer is not in a transport path of the journal from the first storage system to the second storage system, as recited in claim 12 from which claim 13 depends.

For at least the foregoing reasons, claim 13 is patentable over de Remer and Carey.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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